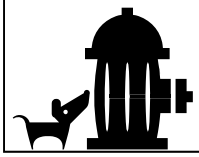
Disinfection Recommendations for Pet Businesses

Important Sanitation Considerations

Keeping your facility clean and disinfected will make it a healthier place for your animals, your staff, and your customers. You must use **both detergent and disinfectant products**. Effective sanitation requires thorough cleaning and washing prior to application of a disinfectant. Detergents alone do not kill germs. Although some disinfectants also act as detergents, many (such as bleach) do not. The effectiveness of many disinfectants is reduced by organic material such as feces, urine, kitty litter, saliva, and dirt, so surfaces must be cleaned before disinfecting.



Use only **approved** disinfectants in your facility. Products that claim to be disinfectants must be registered with the EPA. See the reverse side of this sheet for a list of common disinfectants and their properties to choose what will work best for your facility.

Cleaning

Remove all grossly visible debris. Wash floors and surfaces with detergent & water so they are visibly clean. Thoroughly rinse the cleaned area to remove any detergent residue. No need to disinfect food & water bowls & toys washed in a dishwasher.
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Disinfecting with Bleach

Most surfaces: mix 1/2 cup (4 oz.) of bleach per one gallon of cold water (1:32 solution = 1562.5 ppm available chlorine).
Toys, food & water bowls, & grooming equipment: mix of 1 teaspoon bleach per 2 cups of cold water OR
mix 1/4 cup (2 oz.) of bleach per 1 1/2 gallon (1:100 solution = 500 ppm available chlorine).

Mix fresh bleach solution every few hours and replace when visibly dirty.
Don't mix bleach with your soap solution. That will inactive the disinfectant properties of the bleach.
Use cold water as hot water will make the bleach solution less effective.
Allow bleach solution at least **10 minutes of contact time** with surfaces. Rinse with cold water.

Cleaning and Disinfecting with Quaternary Ammonium Chloride ("Quats")

Quaternary ammonium chloride products are available in gallon containers for dilution and in pre-mixed spray bottles and wipes. These products should be mixed to 660 ppm active quats.

Cleaning and Disinfecting with Oxidizing Agents (i.e Trifectant and Virkon S)

These products are available as tablets or powder for mixing with water. They have some detergent activity. Solutions are effective for up to 7 days after mixing.

Common Terms

- **Bleach:** Sodium Hypochlorite 5.25 – 6.15% dilution.
- **Detergent:** A cleaning agent (including soap) that uses surfactants to suspend dirt and grease. Removes germs but does not kill them.
- **Disinfectant:** A chemical agent that kills most germs. Does not necessarily remove dirt or grease.
- **Disinfectant Cleaners:** Contain surfactants to remove dirt and grease & destroy harmful germs. Many products with quaternary ammonium chloride and oxidizing agents are disinfectant cleaners.
- **Sterilization:** Destruction of all microbes. Generally reserved for surgical equipment.

Surfaces to Disinfect Daily

- Floors, walls and barriers, including fencing
- Food and water containers*
- Toys*
- Grooming equipment
- Kennels and crates (when in use and/or between occupants)
- Furniture in play areas
- Dog runs and walkways
- Cat rooms
- Isolation areas
- Outdoor dog runs and play areas

* No need to disinfect if washed in dishwasher.

For more information contact the Public Health Veterinarian's Office at 206-205-4394
Public Health - Seattle & King County, Zoonotic Disease Program
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Adapted from the UC Davis Koret Shelter Medicine Program: Cleaning and Disinfecting in Shelters and the Iowa State University CFSPH's Disinfection 101.

DILUTIONS
How to Mix your Cleaning and Disinfection Solutions!

Knowing your dilution ratio is important when mixing concentrated liquid cleaning/disinfecting products with water before use. The smaller the number in the ratio the larger the amount of product you will need to use to achieve correct mixing and the "stronger" the solution will be. Remember to always follow the directions on the label of the product. Keep a measuring cup labeled for ounces or cups and for the amount that you usually use handy for easy measuring.

Dilution chart

Dilution ratio	Spray bottle (24 oz.)	1-Quart container (32 oz.)	1-Gallon container (128 oz.)	5-Gallon container (640 oz.)
1:10	2 1/2 oz.	3 oz.	13 oz.	64 oz. (8 cups)
1:15	1 1/2 oz.	2 oz.	8 1/2 oz.	43 oz .(5 1/3 cups)
1:20	1 oz.	1 1/2 oz.	6 1/2 oz.	32 oz. (4 cups)
1:32	3/4 oz.	1 oz.	4 oz.	20 oz (2 1/2 cups)
1:64	1/3 oz.	1/2 oz.	2 oz.	10 oz. (1 1/4 cups)
1:100	1/4 oz. (1/2 tbs.)	1/3 oz.	1 1/3 oz.	6 1/2 oz.
1:200			2/3 oz.	3 oz.
1:256			1/2 oz.	2 1/2 oz.

Mix by adding the water first and then adding the concentrated solution of your product. This will help to prevent accidental back splash of concentrated product on to your hands or clothes. Consider wearing gloves, smock and eye protection when mixing chemicals to prevent injury in case of a spill.

Conversion Chart

	Quarts	Pints	Cups	Ounces	Tablespoons
One gallon	4 quarts	8 pints	16 cup	128 oz.	256 tbs.
One quart		2 pints	4 cups	32 oz.	64 tbs.
One pint			2 cups	16 oz.	32 tbs.
One cup				8 oz.	16 tbs.
One ounce					2 tbs.
One table spoon					3 teaspoons

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Characteristics of Selected Disinfectants

For More Information, see the 'Disinfection 101' document at www.cfsph.iastate.edu

Disinfectant Category	Alcohols	Aldehydes	Biguanides	Halogens: Hypochlorites	Halogens: Iodine Compounds	Oxidizing Agents	Phenols	Quaternary Ammonium Compounds (QAC)
Sample Trade Names	Ethyl alcohol Isopropyl alcohol	Formaldehyde Glutaraldehyde	Chlorhexidine Nolvasan® Virosan®	Bleach	Betadyne® Providone®	Hydrogen peroxide Peracetic acid Virkon S® Oxy-Sept 333®	One-Stroke Environ® Pheno-Tek II® Tek-Trol®	Roccal® DiQuat® D-256®
Mechanism of Action	•Precipitates proteins •Denatures lipids	•Denatures proteins •Alkylates nucleic acids	•Alters membrane permeability	•Denatures proteins	•Denatures proteins	•Denature proteins and lipids	• Denatures proteins • Alters cell wall permeability	• Denatures proteins • Binds phospholipids of cell membrane
Advantages	•Fast acting •Leaves no residue	•Broad spectrum	•Broad spectrum	•Broad spectrum •Short contact time •Inexpensive	•Stable in storage •Relatively safe	•Broad spectrum	• Good efficacy with organic material • Non-corrosive • Stable in storage	• Stable in storage • Non-irritating to skin • Effective at high temperatures and high pH (9-10)
Disadvantages	•Rapid evaporation •Flammable	•Carcinogenic •Mucous membranes and tissue irritation •Only use in well ventilated areas	•Only functions in limited pH range (5–7) •Toxic to fish (environmental concern)	•Inactivated by sunlight •Requires frequent application •Corrodes metals •Mucous membrane and tissue irritation	•Inactivated by QACs •Requires frequent application •Corrosive •Stains clothes and treated surfaces	•Damaging to some metals	• Can cause skin and eye irritation	
Precautions	Flammable	Carcinogenic		Never mix with acids; toxic chlorine gas will be released			May be toxic to animals, especially cats and pigs	
Vegetative Bacteria	Effective	Effective	Effective	Effective	Effective	Effective	Effective	YES—Gram Positive Limited—Gram Negative
Mycobacteria	Effective	Effective	Variable	Effective	Limited	Effective	Variable	Variable
Enveloped Viruses	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
Non-enveloped Viruses	Variable	Effective	Limited	Effective	Limited	Effective	Variable	Not Effective
Spores	Not Effective	Effective	Not Effective	Variable	Limited	Variable	Not Effective	Not Effective
Fungi	Effective	Effective	Limited	Effective	Effective	Variable	Variable	Variable
Efficacy with Organic Matter	Reduced	Reduced	?	Rapidly reduced	Rapidly reduced	Variable	Effective	Inactivated
Efficacy with Hard Water	?	Reduced	?	Effective	?	?	Effective	Inactivated
Efficacy with Soap/ Detergents	?	Reduced	Inactivated	Inactivated	Effective	?	Effective	Inactivated

? Information not found

Disclaimer: The use of trade names does not in any way signify endorsement of a particular product. For additional product names, please consult the most recent Compendium of Veterinary Products.

References: Linton AH, Hugo WB, Russel AD. Disinfection in Veterinary and Farm Practice. 1987. Blackwell Scientific Publications; Oxford, England; Quinn PJ, Markey BK. Disinfection and Disease Prevention in Veterinary Medicine, In: Block SS, ed., Disinfection, Sterilization and Preservation. 5th edition. 2001. Lippincott, Williams and Wilkins: Philadelphia.

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